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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/648,573
Filing Date: August 26, 2003
Appellant(s): KALKUNTE ET AL.

Ognyan J. Beremski, Registration Number 51,458
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 30th, 2009 appealing from the Office action mailed 06/25/2007.

(1) Real Party in Interest

The real party in interest is Broadcom Corporation contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

7,032,037	Garnett et al.	04-2006

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Garnett et al. U.S. Patent Number 7,032,037 B2 (hereinafter Garnett).

As per claim 1, Garnett discloses a method for processing data in a server, the method comprising: receiving at least one [data packet] packet (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13); determining at least one function [for example: load balancing, load distribution, access control, secure transaction management and many other function, see column 31, lines 53-57] associated with said at least one received packet (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13); and steering [forwarding or transmitting outgoing packet]

said at least one received packet to at least one of a plurality of blade servers that handles said determined function (see column 31, lines 25-27; column 32, lines 59-65 column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13).

As per claim 2, Garnett discloses generating at least one association between a particular packet characteristic [data packet] of said packet and a particular data processing function associated with said at least one packet (see column 31, lines 25-27; column 31, lines 53-57; column 32, lines 59-65column 32,line 55 – column 33, line 44).

As per claim 3, Garnett discloses said particular packet characteristic is at one or more of a packet type [data packet itself is one packet type], a packet field and a flag (see column 31, lines 25-27; column 31, lines 53-57; column 32, lines 59-65column 32,line 55 – column 33, line 44).

As per claim 4, Garnett discloses assigning [data packet arrives on load balancer decides which server to which the packet is to be forwarded and packet is forwarded to the selected server as assigning at least one of said plurality of blade servers for handling said particular function] at least one of said plurality of blade servers for handling said particular data processing function (see column 32,line 55 – column 33, line 44).

As per claim 5, Garnett discloses determining which of said plurality of blade servers handles said determined at least one data processing function

associated with said at least one received packet (see column 32,line 55 – column 33, line 44).

As per claim 6, Garnett discloses processing said steered [routing load balanced packets] at least one received packet by said one or more of a plurality of blade servers that handles said determined data processing server function (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13).

As per claim 7, Garnett discloses assigning a default blade server, selected from said plurality of blade server, for handling said at least one received packet (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13).

As per claim 8, Garnett discloses steering said at least one packet to said default blade server if at least one of: said at least one received packet is unrecognized (see column 32,line 55 – column 33, line 44 and column 34, lines 15-40); and said at least one received packet contains a particular data (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13).

As per claim 9, Garnett discloses controlling steering of said at least one packet by at least one of said plurality of blade servers (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13).

As per claim 10, Garnett discloses said at least one of said plurality of blade servers controlling said steering is a switch [an outgoing packet is

transmitted from the processing cartridge [blade] to the switch] blade (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13).

As per claims 11-20, claims 11-20 are machine-readable claims of method claims 1-10, respectively. They do not teach or further define over the limitation as recited in claims 1-10. Therefore, claims 11-20 are rejected under same scope as discussed in claims 1-10, supra.

As per claims 21-30, claims 21-30 are system claims of method claims 1-10, respectively. They do not teach or further define over the limitation as recited in claims 1-10. Therefore, claims 21-30 are rejected under same scope as discussed in claims 1-10, supra.

(10) Response to Argument

3. **Appellant**'s arguments filed in appeal brief have been fully considered but they are not persuasive. As per arguments filed, **appellant** argues to the substance that:

a. Garnett failed to discloses determining at least one data-processing function associated with said at least one received packet, based on said at least one received packet.

In response to **appellant** argument a), examiner would like to point out that Garnett cited prior art is directed to a "Server blade for performing load balancing functions" (see Title) where Garnett discloses:

"A modular computer system may be provided. The modular computer system may comprise a carrier operable removably to receive a plurality of computer system modules therein. A plurality of information processing modules can be removably received in the carrier, each module may have a communications port operable to connect to a communications network internal to the carrier. The modular computer system may also comprise a switch operable to connect to the internal communications network to distribute information messages between the modules and to connect to an external communications network. An information distribution module may be provided removably received in the carrier operable connect to the internal communications network to receive an information message, **to perform processing on the message to determine a destination, and to forward the message toward the determined destination via the internal communications network**." (See Abstract)

As such Garnett is also directed to perform processing on the message to determine a destination and to forward the message toward the determined destination via the internal communication network and such message processing and forwarding in internal communication network performs server communications between one or more servers and/or between clients computer and vice versa. Such processing servers provides an efficient mechanism to manage workload distribution management by performing efficient load balancing to server systems where more than one server is utilized.

"Workload distribution management (load balancing) provides operational efficiency benefits to server systems where more than one server is utilised. Load balancing is the process of distributing new connections to a group of servers between those servers in a controlled fashion. By means of such controlled distribution of new connections, the speed of service experienced by a requesting computer can be increased." **(see column 31, line 63 - column 32, line 3)**

In addition, Garnett also discloses:

> "Computer systems require management in many different ways, for example, load distribution, access control, secure transaction management and many other functions which may be performed with greatest reliability and/or speed by dedicated hardware. That is not to say that such functions may not be performed by a standard processing cartridge 43 programmed using appropriate application software, merely that specialist hardware (in the form of a non-standard processing cartridge) may provide reliability, performance and/or cost benefits." [Column 31, lines 53-62].

It is clear that Garnett is referring to computer systems management in many different ways and **such functions include load distribution, access control, and secure transaction management and many others with greatest reliability and/or speed.** The person skilled in the art would know all such functions are related to data-processing, data management, and data access control as all of them requires reliable, fast, secure data processing or data management by dedicated computer hardware.

Garnett also discloses:

"Server load based weighting involves monitoring each server available to the load balancer to determine the current load of that server. The weight for each server is adjusted based on the current load of that server relative to the current load of other servers. To perform the load monitoring usually requires a software agent running on each server to determine the load experienced by that server. Response time based weighting involves measuring an elapsed time between transmitting a request to a server and receiving a response from that server."

Examiner also considers the following disclosure of Garnett where Garnett discloses about load balancing function (see column 32,lines 4-47). **Also, in column 31, line 49 – column 34, line 40, Garnett briefly discloses why the person skilled in the art would be needing a load balancer and the functionality of load balancing.**:

"An example of a more advanced load balancing algorithm is the "weighted round robin", **where the number of connections assigned per server is specified by a weight assigned to each server**. Thus a conventional round robin may be implemented as a special case of a weighted round robin where all weights are equal. Weights may be determined using a number of factors and may be static (i.e. determined once at power-up and not altered thereafter) or dynamic (i.e. altered according to results of monitoring of the servers). An example of a contributing factor to a static weight (or a static portion of a dynamic weight) is the processing capability of a given server relative to other servers in the group. Thus **a server of high relative processing capability will be weighted to receive more connections than a server of low relative processing capacity**.

Examples of contributing factors to a **dynamic weight are a measurement of server load and a measurement of response time. Server load based weighting involves monitoring each server available to the load balancer to determine the current load of that server. The weight for each server is adjusted based on the current load of that server relative to the current load of other servers. To perform the load monitoring usually requires a software agent running on each server to determine the load experienced by that server**. Response time based weighting involves measuring an elapsed time between transmitting a request to a server and receiving a response from that server. This technique therefore does not require a special component of software on each server. Response time based monitoring is more representative of the actual load of the server than server load based monitoring as it measures the time for processing the request, including the time spent by the application which dealt with the request. Thus it is possible to determine whether a particular application on the server is overloaded, independent of whether the server itself is overloaded."

As such examiner considers, Garnett does discloses determining at least one data-processing function associated with said at least one received packet, based on said at least one received packet (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13, examiner considers logical arrangement of load balancer within the paths of data packet through a computer system).

Garnett briefly discloses in Figures 19a and 19b that load balance is performed on all of the incoming "data traffic" or data packet. Examiner considers the following bolded citation that discloses that load balancing is

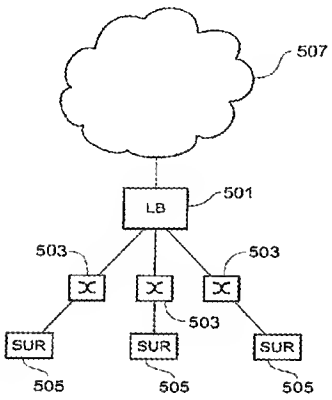

Fig. 19A

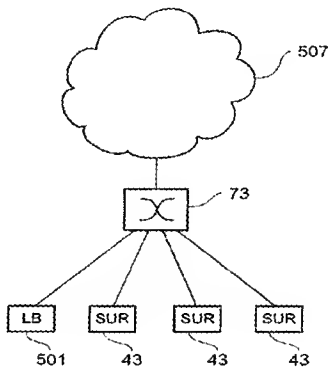

Fig. 19B

U.S. Patent Apr. 18, 2006 Sheet 26 of 30 US 7,032,037 B2

"As **shown in FIG. 19a, a load balancer 501** is arranged between a network 507 (such as a company Intranet, a LAN, a WAN or the Internet) and a plurality of servers 505. Each of the servers 505 is connected to the load balancer 501 via a switch 503. **Thus incoming data packets arrive at the load balancer and are routed therethrough to a selected server 505**. The arrangement of computer system components in terms of the logical arrangement of field replaceable units of a computer system shelf 41 is shown in FIG. 19b. FIG. 19b shows that the network 507 is connected into a switch, which is the switch 73 of the CSSP 71. **The switch 73 directs all incoming traffic to the load balancer 501, which in the present example occupies a slot in the shelf 41 normally occupied by a processing cartridge 43. The load balancer 501 performs load balancing operations and forwards the packets to the selected ones of the processing cartridges 43.**

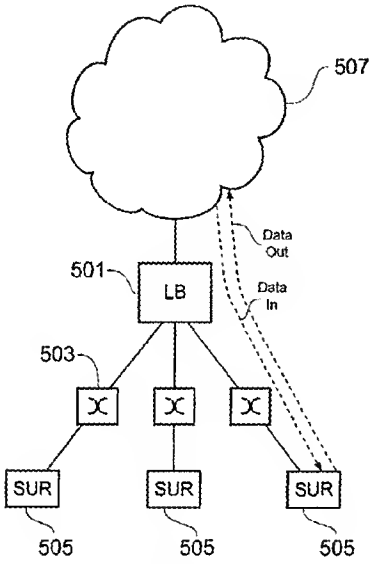

Fig. 20A

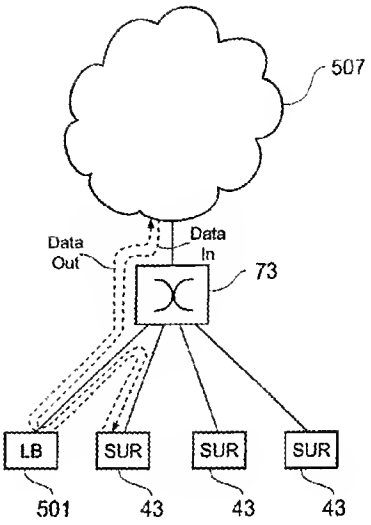

Fig. 20B

The flow of data packets in the most simple load balancing arrangements is shown in FIG. 20a. In FIG. 20a it can be seen that each **incoming data packet arrives at the load balancer 501 which decides on a server to which the packet is to be forwarded. The packet is forwarded to the selected server 505. When a server responds to a received data packet, the outgoing packet is transmitted from the server 505 to the Load Balancer 501, which forwards the outgoing packet to the outside network. Shown in FIG. 20b is a representation of the data packet paths through a shelf 41 arranged as shown in FIG. 19b. Here, the incoming packet arrives at the switch 73, travels to the load balancer 501 and is then passed to a processing cartridge 43 via the switch 73.** An outgoing packet retraces the same path in reverse.

The above described method **of routing load balanced packets causes a high workload for the load balancer, which must deal with**

both incoming and outgoing packets, even though only incoming packets require load balancing. Thus a **technique known as triangular load balancing may be applied to reduce the load balancer's workload.**

Triangular load balancing is shown in more detail in FIGS. 21a and 21b. In triangular load balancing, an incoming data packet arrives at the load balancer 501, is allocated to a given server 505, and is forwarded to that server. However an outgoing data packet **bypasses the load balancer, being transmitted from the server 505 to the outside network without burdening the load balancer 501. Thus the load balancer only sees packets which require load balancing. In the context of a computer system shelf, as shown in FIG. 21b, the incoming data packet passes through the switch 73 to the load balancer 501, then is routed by the load balancer 501 to a given processing cartridge 43 via the switch 73. An outgoing packet is transmitted from the processing cartridge 43 to the switch 73, which forwards it to the outside network without involving the load balancer 501.**

Load balancing may be performed at one or more network layers. The present example is described in the context of the TCP/IP (Transmission Control Protocol/Internet Protocol) networking protocol suite. As will be appreciated, any other network protocol or protocol suite may be used in place of TCP/IP without departing from the invention. A logical illustration of the structure of the TCP/IP network layers according to the TCP/IP 5-Layer Network Reference Model is shown in FIG. 22. "

Examiner considers "**The switch 73 directs all incoming traffic to the load balancer 501, which in the present example occupies a slot in the shelf 41 normally occupied by a processing cartridge 43. The load balancer 501 performs load balancing operations and forwards the packets to the selected ones of the processing cartridges**" In addition, Garnett discloses steering said one or more received packet to at least one of a plurality of blade servers that handles said determined data-processing function (see column 32,line 55 – column 33, line 44 and column 35, line 7 - column 36, line 13). In addition to the disclosure of Garnett from above argument Garnett also discloses:

> "Each of the servers 505 is connected to the load balancer 501 via a switch 503. Thus incoming data packets arrive at the load balancer and are routed there through to a selected server 505." [Column 32, lines 59-65].

The person skilled in the art would interpret steering said one or more received packet to at least plurality of blade servers as routing incoming data packets such as routing packets via load balancer to a selected server where Garnett mentioned that selected server is a server blade that include a processor and memory can be configured by means of software, firmware or hardware to provide a special purpose function [see column 31, lines 25-27]. Therefore, the person skilled in the art would know that Garnett discloses steering said one or more received packet to at least one of a plurality of blade servers that handles said determined data-processing function. Therefore, **the person** skilled in the art would know the weighted load on each server is "data" and each data loads are monitored using a software agent running on each server to determine the load experienced by that particular server. Therefore, Garnett does discloses determining at least one data-processing function associated with said at least one received packet, based on said at least one received packet.

As per claims 2-10, arguments presented in dependent claims 2-10 depend upon the arguments presented in claim 1. Similarly, arguments presented in claims 11-30 are same arguments as discussed in claim 1. Therefore, appellant all arguments presented in claims 2-30 are not persuasive as they all depend upon the arguments as discussed in claim 1, supra.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Examiner, Art Unit 2451

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